KUBE-8020

Fanless Box PC

User's Guide

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Quanmax

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Quanmax reserves the right to make changes without notice in product or component design as warranted by evolution in user needs or progress in engineering or manufacturing technology. Changes which affect the operation of the unit will be documented in the next revision of this user's guide.

Revision	Date	Edited by	Changes
1.00	01/24/2008	JC	Initial Release
2.00	05/01/2008	JC	Convert to Quanmax

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◆ Safety Instructions

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◆ Before You Begin

Before handling the KUBE-8020, read the instructions and safety guidelines on the following pages to prevent damage to the product and to ensure your own personal safety. Refer to the “Advisories” section in the Preface for advisory conventions used in this user’s guide, including the distinction between Warnings, Cautions, Important Notes, and Notes.

- Always use caution when handling/operating a computer. Only qualified, experienced, authorized electronics service personnel should access the interior of a computer. The power supplies produce high voltages and energy hazards, which can cause bodily harm.
- Use extreme caution when installing or removing components. Refer to the installation instructions in this user’s guide for precautions and procedures. If you have any questions, please contact Quanmax Post-Sales Technical Support.

WARNING

High voltages are present inside the chassis when the unit’s power cord is plugged into an electrical outlet. Turn off system power, turn off the power supply, and then disconnect the power cord from its source before removing the chassis cover. Turning off the system power switch does not remove power to components.

◆ When Working Inside a Computer

Before taking covers off a computer, perform the following steps:

1) Turn off the computer and any peripherals.

2) Disconnect the computer and peripherals from their power sources or subsystems to prevent electric shock or system board damage. This does not apply when hot swapping parts.

3) Follow the guidelines provided in “Preventing Electrostatic Discharge” on the following page.

4) Disconnect any telephone or telecommunications lines from the computer.

In addition, take note of these safety guidelines when appropriate:

- To help avoid possible damage to system boards, wait five seconds after turning off the computer before removing a component, removing a system board, or disconnecting a peripheral device from the computer.

- When you disconnect a cable, pull on its connector or on its strain-relief loop, not on the cable itself. Some cables have a connector with locking tabs. If you are disconnecting this type of cable, press in on the locking tabs before disconnecting the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before connecting a cable, make sure both connectors are correctly oriented and aligned.

CAUTION

Do not attempt to service the system yourself except as explained in this user’s guide. Follow installation and troubleshooting instructions closely.

◆ *Preventing Electrostatic Discharge*

Static electricity can harm system boards. Perform service at an ESD workstation and follow proper ESD procedure to reduce the risk of damage to components. Quanmax strongly encourages you to follow proper ESD procedure, which can include wrist straps and smocks, when servicing equipment.

You can also take the following steps to prevent damage from electrostatic discharge (ESD):

- When unpacking a static-sensitive component from its shipping carton, do not remove the component's antistatic packing material until you are ready to install the component in a computer. Just before unwrapping the antistatic packaging, be sure you are at an ESD workstation or grounded. This willl discharge any static electricity that may have built up in your body.
- When transporting a sensitive component, first place it in an antistatic container or packaging.
- Handle all sensitive components at an ESD workstation. If possible, use antistatic floor pads and workbench pads.
- Handle components and boards with care. Don't touch the components or contacts on a board. Hold a board by its edges or by its metal mounting bracket.
- Do not handle or store system boards near strong electrostatic, electromagnetic, magnetic, or radioactive fields.

◆ Instructions for Lithium Battery

The installed SBC (Single Board Computer) of your KUBE-8020 is equipped with a lithium battery.

WARNING

Danger of explosion when battery is replaced with incorrect type. Only replace with the same or equivalent type recommended by the manufacturer.

Do not dispose of lithium batteries in domestic waste. Dispose of the battery according to the local regulations dealing with the disposal of these special materials (e.g. to the collecting points for disposal of batteries).

◆ Voltage Ratings

The KUBE-8020 has the following voltage input ratings:

- DC 15-35V (5.5A @ 24VDC typical)
- optional AC adapter (100-240V, 1.3A@100V)

◆ Preface

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How to Use This Guide

This guide is designed to be used as step-by-step instructions for installation, and as a reference for operation, troubleshooting, and upgrades.

Note: Driver downloads and additional information are available under *Downloads* on our web site: **www.quanmax.com.**

The following is a summary of the chapter contents:

- **Chapter 1, Product Introduction,** presents the product specifications and system architecture for the KUBE-8020.
- **Chapter 2, Assembly/Disassembly,** describes how to access the system's internal components and locations of connectors so that you can easily configure your system.
- **Chapter 3, Getting Started,** describes how to connect power to your system and installation of the required drivers and operating system.
- **Chapter 4, Maintenance and Prevention,** describes how to maintain your system and prevent damage and may include instructions for fan removal, cleaning the air filter and battery replacement.
- **Chapter 5, Interface Definitions,** provides information on the connector interfaces of the KUBE-8020.

◆ *Unpacking*

When unpacking, follow these steps:

1) After opening the box, save it and the packing material for possible future shipment.

2) Remove all items from the box. If any items listed on the purchase order are missing, notify Quanmax customer service immediately.

3) Inspect the product for damage. If there is damage, notify Quanmax customer service immediately. Refer to “Warranty Policy” for the return procedure.

Regulatory Compliance Statements

This section provides the FCC compliance statement for Class A devices.

FCC Compliance Statement for Class A Devices

The product(s) described in this user's guide has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the user's guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their own expense.

Changes or modifications not expressly approved by Quanmax could void the user's authority to operate the equipment.

Note: The assembler of a personal computer system may be required to test the system and/or make necessary modifications if a system is found to cause harmful interference or to be noncompliant with the appropriate standards for its intended use.

◆ *Warranty Policy*

◆ Limited Warranty

Quanmax Inc.'s detailed Limited Warranty policy can be found under *Support* at **www.quanmax.com**. Please consult your distributor for warranty verification.

The limited warranty is void if the product has been subjected to alteration, neglect, misuse, or abuse; if any repairs have been attempted by anyone other than Quanmax or its authorized agent; or if the failure is caused by accident, acts of God, or other causes beyond the control of Quanmax or the manufacturer. Neglect, misuse, and abuse shall include any installation, operation, or maintenance of the product other than in accordance with the user's guide.

No agent, dealer, distributor, service company, or other party is authorized to change, modify, or extend the terms of this Limited Warranty in any manner whatsoever. Quanmax reserves the right to make changes or improvements in any product without incurring any obligation to similarly alter products previously purchased.

◆ Return Procedure

For any Limited Warranty return, please contact *Support* at **www.quanmax.com** and login to obtain a Return Material Authorization (RMA) Number. If you do not have an account, send an email to *support@quanmax.com* to apply for one.

All product(s) returned to Quanmax for service or credit **must** be accompanied by a Return Material Authorization (RMA) Number. Freight on all returned items **must** be prepaid by the customer who is responsible for any loss or damage caused by common carrier in transit. Returns for Warranty **must** include a Failure Report for each unit, by serial number(s), as well as a copy of the original invoice showing the date of purchase.

To reduce risk of damage, returns of product must be in a Quanmax shipping container. If the original container has been lost or damaged, new shipping containers may be obtained from Quanmax Customer Service at a nominal cost.

Quanmax owns all parts removed from repaired products. Quanmax uses new and reconditioned parts made by various manufacturers in performing warranty repairs and building replacement products. If Quanmax repairs or replaces a product, its warranty term is not extended.

Shipments not in compliance with this Limited Warranty Return Policy will not be accepted by Quanmax.

◆ Limitation of Liability

In no event shall Quanmax be liable for any defect in hardware, software, loss, or inadequacy of data of any kind, or for any direct, indirect, incidental, or consequential damages in connection with or arising out of the performance or use of any product furnished hereunder. Quanmax's liability shall in no event exceed the purchase price of the product purchased hereunder. The foregoing limitation of liability shall be equally applicable to any service provided by Quanmax or its authorized agent.

Maintaining Your Computer

Environmental Factors

Temperature

The ambient temperature within an enclosure may be greater than room ambient temperature. Installation in an enclosure should be such that the amount of air flow required for safe operation is not compromised. Consideration should be given to the maximum rated ambient temperature. Overheating can cause a variety of problems, including premature aging and failure of chips or mechanical failure of devices.

If the system has been exposed to abnormally cold temperatures, allow a two-hour warm-up period to bring it up to normal operating temperature before turning it on. Failure to do so may cause damage to internal components, particularly the hard disk drive.

Humidity

High-humidity can cause moisture to enter and accumulate in the system. This moisture can cause corrosion of internal components and degrade such properties as electrical resistance and thermal conductivity. Extreme moisture buildup inside the system can result in electrical shorts, which can cause serious damage to the system.

Buildings in which climate is controlled usually maintain an acceptable level of humidity for system equipment. However, if a system is located in an unusually humid location, a dehumidifier can be used to maintain the humidity within an acceptable range. Refer to the “Specifications” section of this user’s guide for the operating and storage humidity specifications.

Altitude

Operating a system at a high altitude (low pressure) reduces the efficiency of the cooling fans to cool the system. This can cause electrical problems related to arcing and corona effects. This condition can also cause sealed components with internal pressure, such as electrolytic capacitors, to fail or perform at reduced efficiency.

Power Protection

The greatest threats to a system's supply of power are power loss, power spikes, and power surges caused by electrical storms, which interrupt system operation and/or damage system components. To protect your system, always properly ground power cables and one of the following devices.

Surge Protector

Surge protectors are available in a variety of types and usually provide a level of protection proportional with the cost of the device. Surge protectors prevent voltage spikes from entering a system through the AC power cord. Surge protectors, however, do not offer protection against brownouts, which occur when the voltage drops more than 20 percent below the normal AC line voltage level.

Line Conditioner

Line conditioners go beyond the overvoltage protection of surge protectors. Line conditioners keep a system's AC power source voltage at a fairly constant level and, therefore, can handle brownouts. Because of this added protection, line conditioners cost more than surge protectors. However, line conditioners cannot protect against a complete loss of power.

Uninterruptible Power Supply

Uninterruptible power supply (UPS) systems offer the most complete protection against variations on power because they use battery power to keep the server running when AC power is lost. The battery is charged by the AC power while it is available, so when AC power is lost, the battery can provide power to the system for a limited amount of time, depending on the UPS system.

UPS systems range in price from a few hundred dollars to several thousand dollars, with the more expensive unit s allowing you to run larger systems for a longer period of time when AC power is lost. UPS systems that provide only 5 minutes of battery power let you conduct an orderly shutdown of the system, but are not intended to provide continued operation. Surge protectors should be used with all UPS systems, and the UPS system should be Underwriters Laboratories (UL) safety approved.

Chapter 1

Product Introduction

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◆ Overview

The KUBE-8020 is a compact Fanless Box PC ideal for space-critical applications. This powerful embedded hardware platform supports an Intel® Core™2 Duo processor (Socket-M, 478-pin µFC-PGA package), 945GM/ICH7M chipset, and DDR2 up to 4GB . Featured are a 2.5” SATA HDD, and Mini PCI slot, dual Gigabit Ethernet, USB 2.0, VGA, optional DVI and HDMI, serial port, and PS/2 KB/MS.

The KUBE-8020 provides high performance, reliability for harsh environments, compact size, noiseless operation and is highly suited to a wide range of industrial applications such as Kiosk, ATM, Gaming, Transportation, Entertainment, Surveillance, and Thin Servers. Wall and desktop mounting supported.

◆ Checklist

1. Take out the KUBE-8020 series unit from the carton box, check if the unit is properly secure in the plastic bag.

2. Check the contents of the carton box:

- ♦ Box PC
- ♦ Wallmount Brackets (2 pcs.)
- ♦ Screw bag (6 pcs. for Wallmount Brackets)
- ♦ Driver CD
- ♦ AC adapter with power cord (optional)

If any of these items is damaged or missing, please contact Quanmax. Save all packing materials for future replacement and maintenance.

Features

Motherboard

The KUBE-8020 is based on a Mini-ITX motherboard supporting a single **Intel® Core™ 2 Duo** Processor (Socket-M) in a
478 µFC-PGA package , **Intel® 945GM GMCH** and **Intel® I/O Controller Hub 7 ICH7M** chipset, 2x DIMM slots for 400/533/667 DDR2 up to 4GB, dual Gigabit Ethernet via two Realtek 8111B Controllers, LPC-based Winbond W83627EHF Super I/O controller, and Realtek ALC883 HD Audio CODEC.

Input/Output

The KUBE-8020 has the following I/O interfaces:

- Front I/O:
  - Power Switch
  - Power LED
  - HDD Activity LED
  - 2x USB ports
- Rear I/O:
  - 2x Gigabit Ethernet
  - 1x Serial Port
  - 4x USB 2.0
  - VGA port
  - DVI-I, HDMI (optional, with UGM module)
  - Mic-in, Line-in, Line-out (HD audio)
  - PS/2 Keyboard, Mouse
  - Wi-Fi antenna (optional)

Storage

The KUBE-8020 has a 2.5” Hard Drive Bay (SATA).

Expansion

The KUBE-8020 has a Mini PCI slot and UGM module interface.

Power Supply

The KUBE-8020 has a DC 15-35V power supply (optional AC adapter).

◆ Product Specifications

KUBE-8020 Specifications

Construction	• SECC t=1.0mm chassis & aluminum extrusion
Processor	• Intel® Core™2 Duo support – Socket-M, 478-pin mFC-PGA
Chipset	• Intel® 945GM GMCH, ICH7M
RAM	• 2x DIMM DDR2 400/533/667 dual channel up to 4 GB
Internal Storage	• 1x 2.5" SATA HDD
Front I/O	• Power Switch • Power LED • HDD Activity LED • 2x USB ports
Rear I/O	• 2x Gigabit Ethernet • 1x Serial Port • 4x USB 2.0 • VGA port • DVI-I, HDMI (optional, with UGM module) • Mic-in, Line-in, Line-out (HD audio) • PS/2 Keyboard, Mouse • WiFi antenna (optional)
Expansion	• Mini PCI slot • UGM module interface
Power Supply	• DC 15-35V (5.5A @ 24VDC typical) • optional AC adapter (100-240V, 1.3A@100V)
Cooling	• Fanless, integrated cooling solution
Temperature / Humidity	• Operating: 0°C to 50°C, 10%-90%, non-condensing • Storage: -20°C to 80°C, 10%-90%, non-condensing
Vibration	• Operating (IEC 68-2-64 Fh): 5-500Hz, 1 g (rms) / 3-axes • Storage (IEC 68-2-6 Fc): 5-500Hz, 2 g (rms) / 3-axes
Shock	• Operating: 10 g / 11ms (half-sine) • Storage: 50 g / 11ms (half-sine)
Dimensions	• 242.6 x 227.4 x 74.0 mm (WxDxH)
Weight	• 3.5kg (approx.)
Mounting	• Desktop, Wall mount
OS	• Windows 2000/2003, XP, Linux, XP embedded
Certifications	• CE, FCC Class A
RoHS compliant	• yes

Table 1-1. KUBE-8020 Specifications

Mechanical Layout

Front Panel

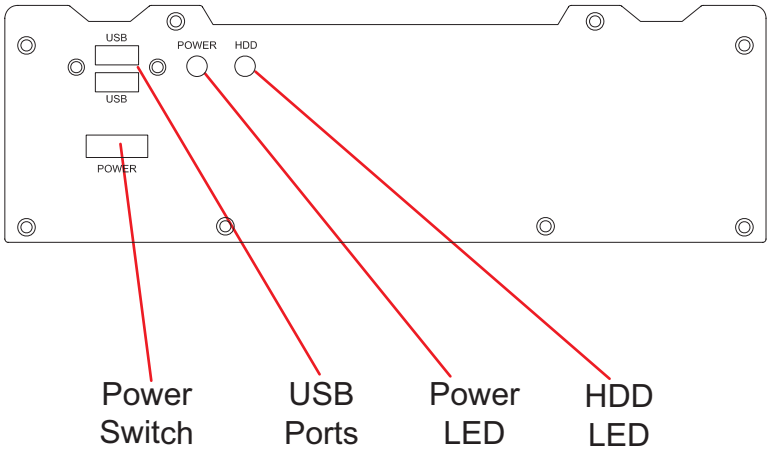

Figure 1-1. KUBE-8020 Mechanical Layout - Front Panel

Rear Panel

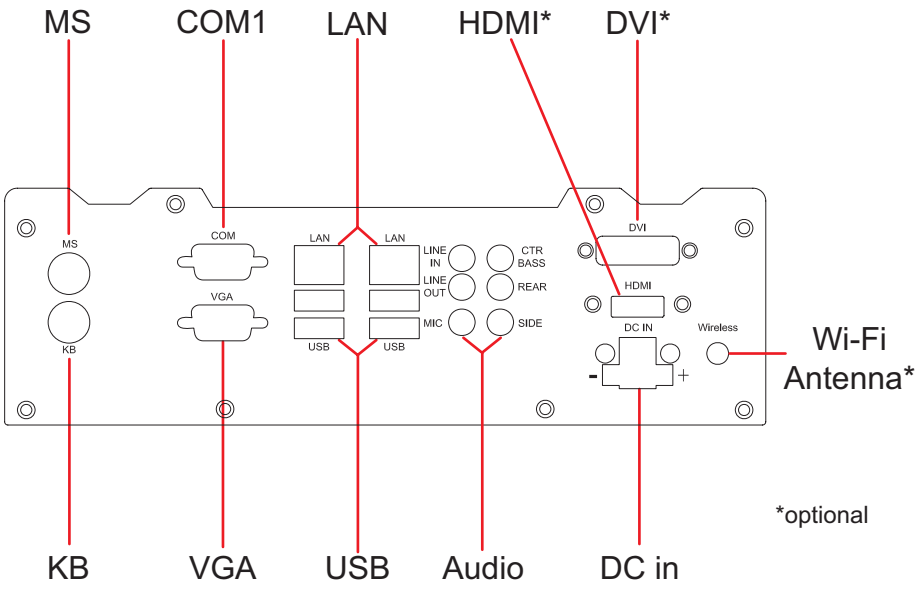

Figure 1-2. KUBE-8020 Mechanical Layout - Rear Panel

◆ *Mechanical Dimensions*

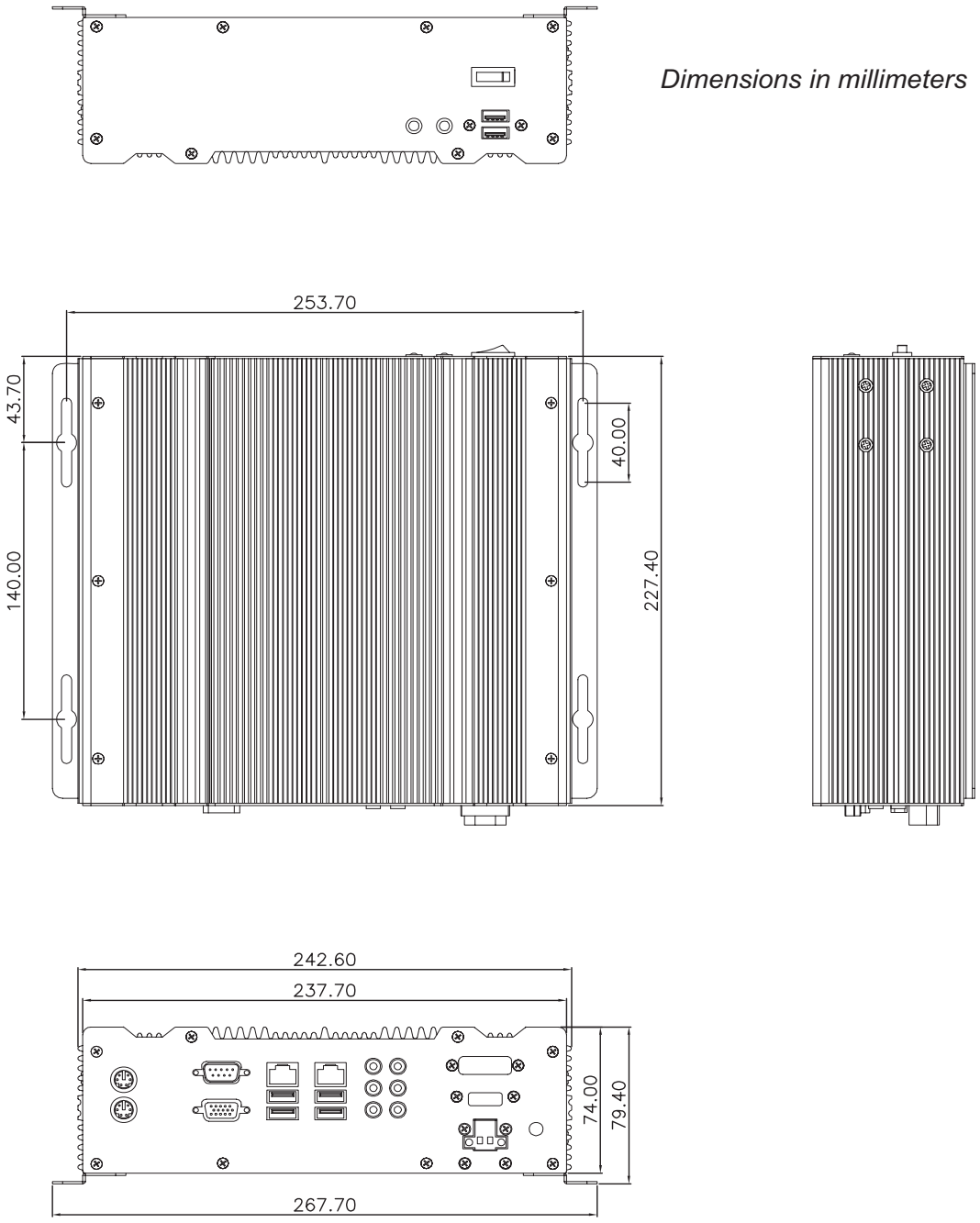

Figure 1-3. KUBE-8020 Mechanical Dimensions (with wall mount bracket)

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Accessing Internal Components

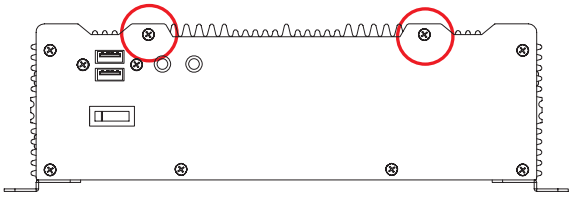
WARNING

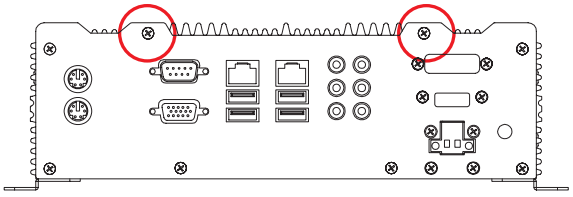
Before opening your system, make sure to turn it off and disconnect the power sources to prevent electric shock or system damage.

Removing the Chassis Cover

Follow the procedure described below to access the system's internal components.

1) To remove the chassis cover, loosen the 4 short screws from the front and rear panels, and and 6 long screws from the chassis cover as shown.





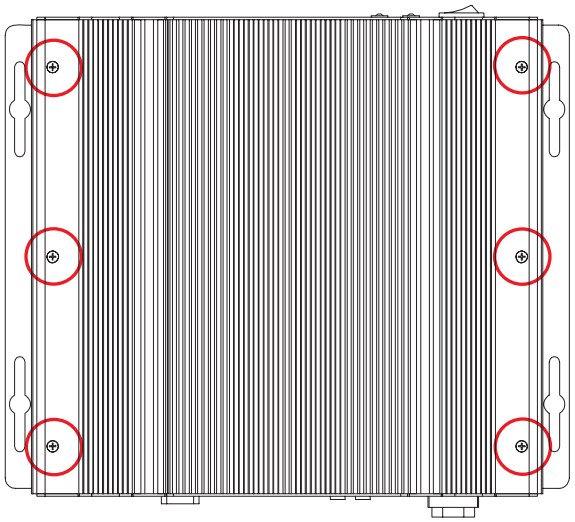


Figure 2-1. KUBE-8020 Chassis Cover screw locations

2) Carefully pry the chassis cover up and off of the chassis base. Use a non-metallic tool or Phillips screwdriver tip wrapped in cloth if you have difficulty. Be careful not to damage the thermal pads on the underside of the lid.

Figure 2-2. KUBE-8020 - Removing the Chassis Cover

◆ Replacing the Chassis Cover

To replace the chassis cover, carefully align it with the chassis, making sure not to damage the thermal pads. Ensure that all wires are correctly routed to avoid damaging them. Replace and tighten the 6 long screws to secure the chassis cover. Replace and tighten the 4 screws on the front and rear panels.

System Component Locations

See *Figure 2-3* below for the locations of the internal components of the system.

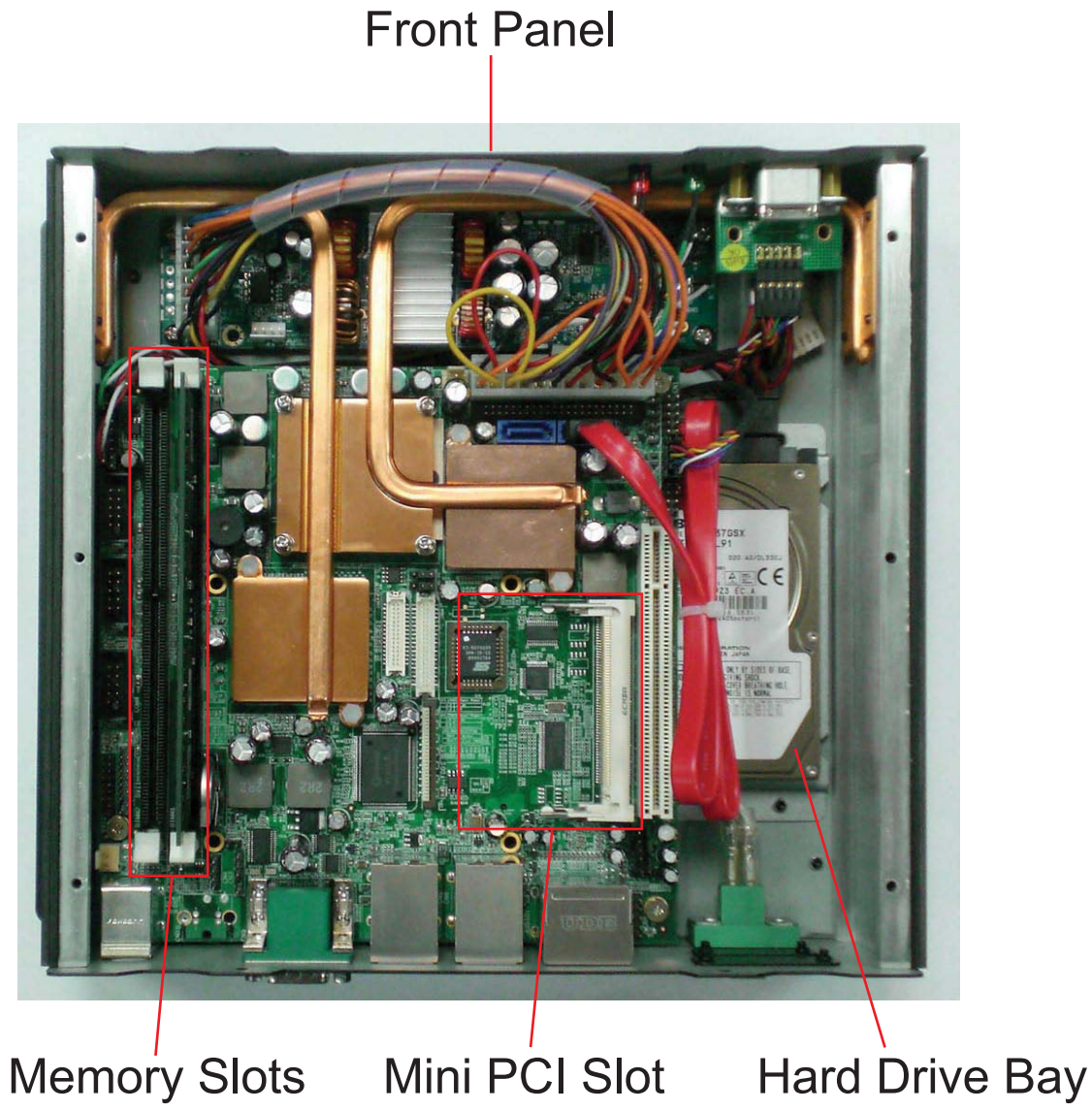


Figure 2-3. KUBE-8020 - System Component Locations

Memory Module Installation

Figure 3-4 below displays the notch marks as they should look on your DIMM memory modules.

DDR2 DIMMs have 240-pins and one notch that will match with the onboard DIMM sockets. DIMM modules are installed by placing the chip firmly into the socket at a 90-degree angle and pressing straight down (Figure 3-4) until it fits tightly into the DIMM socket.

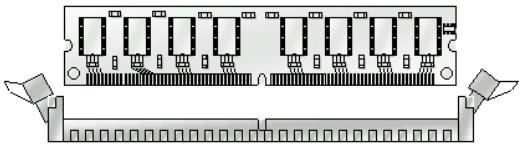


Figure 2-4. DIMM Memory and 240-pin Socket

Installing a DIMM

Carefully follow the steps below in order to install the DIMMs:

1) To avoid generating static electricity and damaging the DIMM, ground yourself by touching a grounded metal surface or using a ground strap before you touch the DIMM.

2) Do not touch the connectors of the DIMM. Dirt or other residue may cause a malfunction.

3) Hold the DIMM with its notch aligned with the memory socket of the KUBE-8020 and insert it completely into the socket. Lift the locking tabs at each end of the DIMM socket to lock it in position.

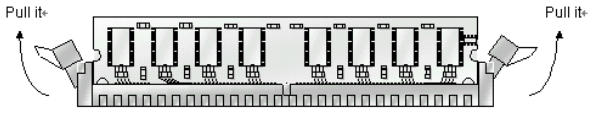


Figure 2-5. Memory Installation

4) If you install two DIMMs, install the second DIMM using the same procedure as above.

5) If the DIMM does not go in smoothly, do not force it. Pull it all the way out and try again.

6) Make sure the DIMM is properly installed and locked by the tabs on both sides of the socket.

Removing a DIMM:

To remove the DIMM, use your fingers or a small screwdriver to carefully push away the plastic tabs that secure the DIMM at each end. Lift it out of the socket.

Make sure you store the DIMM in an anti-static bag. The socket must be populated with memory modules of the same size and manufacturer.

◆ Installing a Mini PCI Card

The KUBE-8020 provides space for one Mini PCI expansion card as shown in *Figure 2-3* above. To install a Mini PCI card fully insert card into the slot, then press down to lock the card in place.

◆ Installing a Wi-Fi Antenna

The KUBE-8020 provides an opening to install a Wi-Fi antenna, shown in *Figure 1-2. KUBE-8020 Mechanical Layout - Rear Panel*. To install a Wi-Fi antenna, remove the circular pre-cut punch-out and secure the antenna to the chassis.

◆ Wall Mounting

The KUBE-8020 comes with two L-brackets for wall mounting. Secure the L-brackets to the chassis as shown using the screws provided.

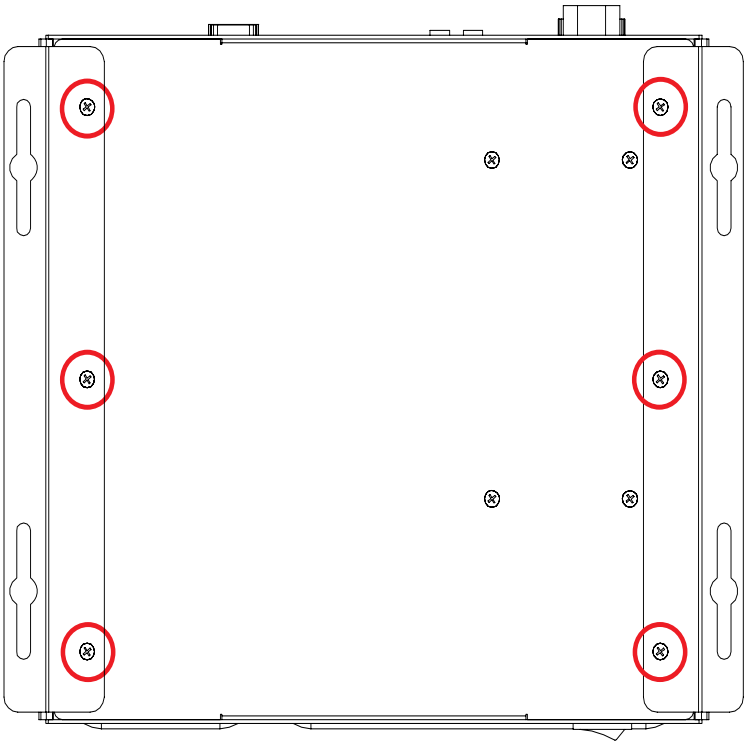


Figure 2-6. Secure the wallmount L-brackets to the KUBE-8020 chassis

Refer to *Figure 1-3. KUBE-8020 Mechanical Dimensions* for wallmount hole spacing. The shape of the screw holes allows the KUBE-8020 to be mounted with the Front Panel facing either up or down, and provides for easy removal of the chassis for repair of maintanence. Use standard M4 or M5 screws to mount the KUBE-8020.

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Chapter 3

Getting Started

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Power Connection

DC Power

1) Make sure the power distribution to the DC power feed wires is disconnected.

2) Remove just enough insulator material from the ends of the wires to allow a proper electrical connection to the terminal block.

3) Insert the power feed wires into the terminal block and tighten the compression clamps on the top side of the terminal block.

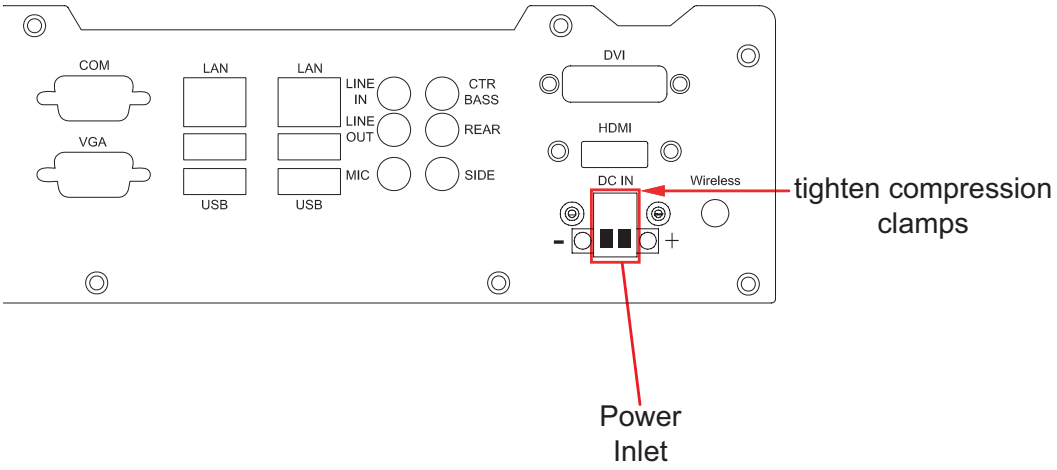

Figure 3-1. Tighten the terminal block compression clamps on the DC inlet

4) Connect the power distribution to the DC power feed wires.

◆ AC Power

The KUBE-8020 has an optional external AC adapter.

1) Connect the output wires of AC adapter to the system DC power inlet as for the DC Power version above. Make sure note the correct polarity of the wires: White = positive (+), Black = negative (-).

2) Connect the other end of the AC power cord to a corresponding outlet.

CAUTION

Use the power cord suitable for the power supply in your country.
Do not remove or alter the grounding prong on the power cord. In situations where a two-slot receptacle is present, have it replaced with a properly grounded three-prong grounding type receptacle.

◆ Operating System and Drivers

If your KUBE-8020 Box PC does not come with an operating system pre-installed, you will need to install an operating system and the necessary drivers as described below. After you have finished assembling your system and connected the appropriate power source, power it up using the ATX Power Switch and install the desired operating system.

The following sections describe driver installation procedures for Windows operating systems. Download the drivers for the KUBE-8020 Box PC from the Quanmax website at **www.quanmax.com** and install them in the order they are listed below. For other operating systems, please contact Quanmax.

◆ Chipset Driver Installation

To install the Intel® 855G chipset drivers, extract the contents of **ICH_KUBE-8020.zip** and run the file "**infinst_autol.exe**" in **ICH Driver**. When asked to reboot the system, click "yes".

◆ Graphics Driver Installation

After installing the chipset driver, extract the contents of **Graphics_KUBE-8020.zip** and install the graphics driver by running the file "**win2k_xp1429.exe**"**.** After installation is complete, reboot the system.

◆ Audio Driver Installation

To install the install the audio driver, extract the contents of **Audio_KUBE-8020.zip** and run the file "**WDM_R167.exe**"**.** Follow the instructions given.

◆ LAN Driver Installation

To install the LAN Driver, extract the contents of **LAN_KUBE-8020.zip** and run the file "**setup.exe**" and follow the instructions given.

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Chapter 4

Maintenance

Contents

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◆ *Maintenance and Prevention*

Your KUBE-8020 system requires minimal maintenance and care to keep it operating correctly.

- ♦ Occasionally wipe the system with a soft dry cloth.
- ♦ You should only remove persistent dirt by use of a soft, slightly damp cloth (use only a mild detergent).
- ♦ Make sure the ventilation holes are clear of debris.

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Chapter 5

Interfaces

Contents

External Connectors 5-3
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External Connectors

Please refer to *Figure 1-2. KUBE-8020 Mechanical Layout - Rear Panel* for connector locations.

PS/2 Mouse Connector (CN7: 6-pin green Mini DIN):

PIN	SIGNAL	PIN	SIGNAL
1	Mouse data	2	NC
3	Ground	4	+5V
5	Mouse clock	6	NC

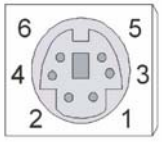


Table 5-1. PS/2 Mouse Connector pin definition

PS/2 Keyboard Connector (CN7: 6-pin purple Mini DIN):

PIN	SIGNAL	PIN	SIGNAL
1	Keyboard data	2	NC
3	Ground	4	+5V
5	Keyboard clock	6	NC

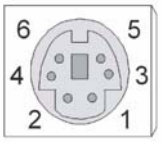


Table 5-2. PS/2 Keyboard Connector pin definition

COM1 RS-232 Serial Port Connector (CN9: D-Sub 9-pin male):

PIN	SIGNAL	PIN	SIGNAL
1	DCD (Data Carrier Detect)	6	DSR (Data Set Ready)
2	RXD (Receive Data)	7	RTS (Request to Send)
3	TXD (Transmit Data)	8	CTS (Clear to Send)
4	DTR (Data Terminal Ready)	9	RI (Ring Indicator)
5	Ground		

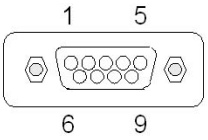


Table 5-3. COM1 RS-232 Serial Port Connector pin definition

◆ *VGA Display Connector (CN9: D-Sub 15-pin female):*

PIN	SIGNAL	PIN	SIGNAL
1	Red	2	Green
3	Blue	4	NC
5	Ground	6	Ground
7	Ground	8	Ground
9	VCC	10	Ground
11	NC	12	DDCData
13	HSync	14	VSync
15	DDCClk		

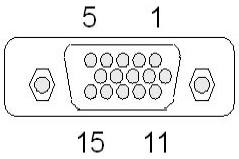
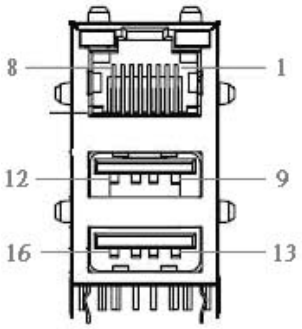


Table 5-4. VGA Display Connector pin definition

◆ *RJ-45 + 2 USB 2.0 Connector (CN5-6):*

PIN	SIGNAL	PIN	SIGNAL
1	MDI[0]+	9	+5VSB
2	MDI[0]-	10	USB_A-
3	MDI[1]+	11	USB_A+
4	MDI[1]-	12	GND
5	MDI[2]+	13	+5VSB
6	MDI[2]-	14	USB_B-
7	MDI[3]+	15	USB_B+
8	MDI[3]-	16	GND



LAN LED	Function
Yellow	LINK / ACTIVE
OFF / Green / Orange	Speed 10 / Speed 100 / Speed 1000

Table 5-5. RJ-45 + 2 USB 2.0 Connector pin definition

◆ Internal Connectors and Jumpers

For jumper and connector locations, please refer to the diagrams below.

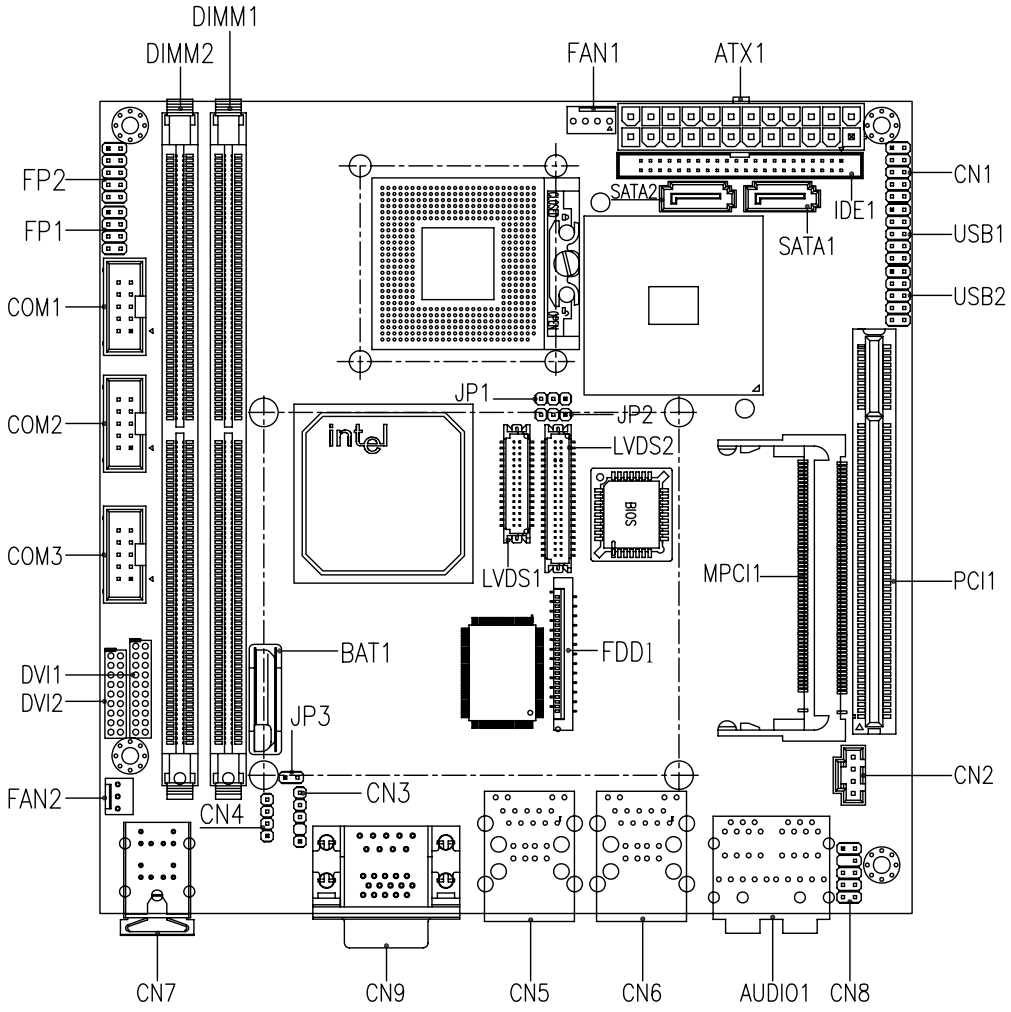


Figure 5-1. KUBE-8020 Internal Jumper and Connector Locations - Top Side

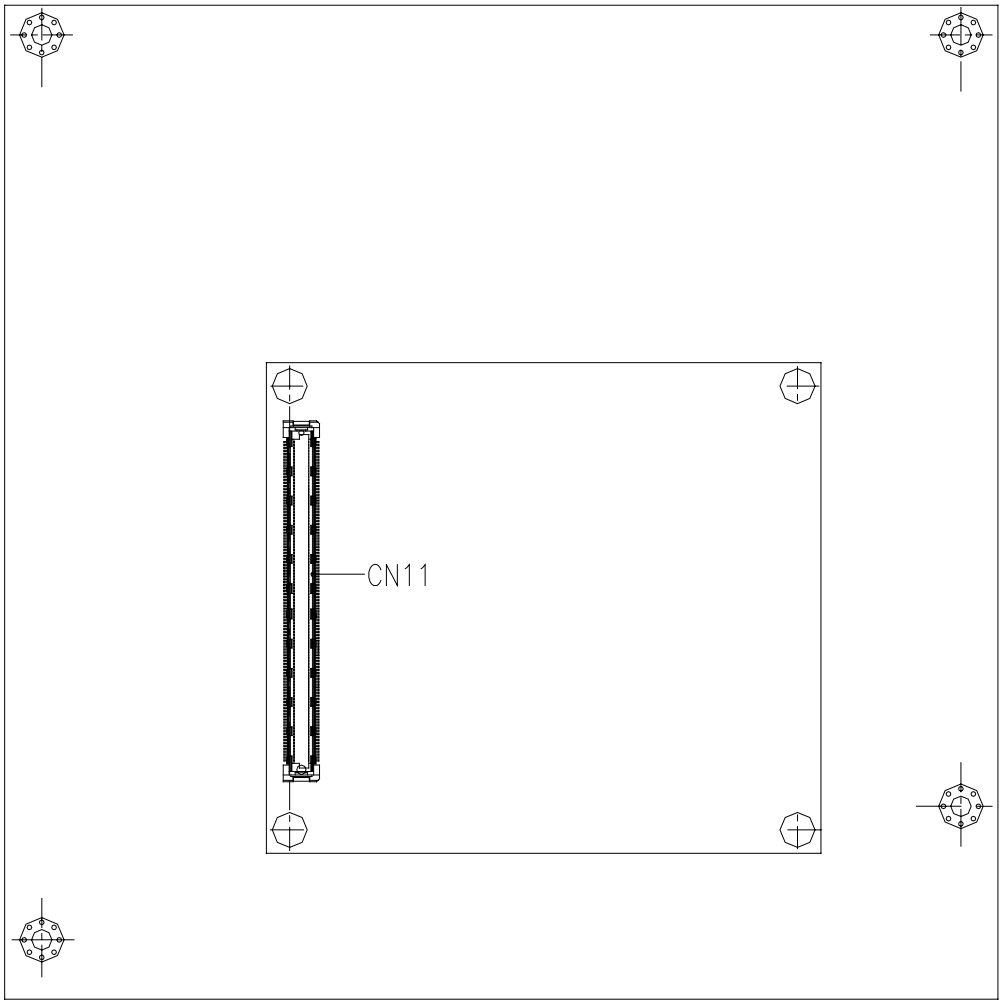


Figure 5-2. KUBE-8020 Internal Socket Locations - Bottom Side

Jumper Settings

To ensure correct system configuration, the following section describes how to set the jumpers to enable/ disable or change functions. For jumper descriptions, please refer to the table below.

Jumper	Function
JP1	LVDS1 Panel Power Selection
JP2	LVDS2 Panel Power Selection
JP3	Clear CMOS Jumper

Table 5-6. Jumper Descriptions

LVDS1 Panel Power Selection (JP1: 3-pin 2.54mm pitch header):

Function	JP1
+ 3.3 V (Default)	1-2 Short
+ 5 V	2-3 Short

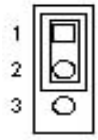


Table 5-7. Panel Power Selection - LVDS1

LVDS2 Panel Power Selection (JP2: 3-pin 2.54mm pitch header):

Function	JP3
+ 3.3 V (Default)	1-2 Short
+ 5 V	2-3 Short

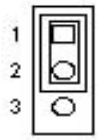


Table 5-8. Panel Power Selection - LVDS2

Clear CMOS setting (JP3: 2-pin 2.54mm pitch header):

Function	JP2
Normal (Default)	Open
Clear CMOS	Short

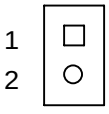


Table 5-9. Clear CMOS Setting

◆ Connector Pin Definitions

For Main Board connector and header descriptions, please refer to the table below.

Connector	Function
ATX1	ATX Power Connector
CN1	Digital I/O Pin Header
CN2	CD-In Connector
CN3	IrDA Connector
CN4	TV Input Pin Header
CN8	Front Panel Audio Pin Header
CN11	UGM Connector
COM2-4	RS-232 COM2-4 Box Header
DVI1	Primary DVI Pin Header
DVI2	Secondary DVI Pin Header
FAN1	4-Pin Fan Connector
FAN2	3-Pin Fan Connector
FDD1	Slim Type Floppy Connector
FP1	Front Panel 1 Pin Header
FP2	Front Panel 2 Pin Header
IDE1	IDE 44-pin Connector
LVDS1	Primary LVDS Connector
LVDS2	Secondary LVDS Connector
PCI1	PCI slots
SATA1	Primary SATA Connector
SATA2	Secondary SATA Connector
USB1	USB 2.0 x2 Pin Header
USB2	USB 2.0 x2 Pin Header

Table 5-10. Main Board Connector and Header Descriptions

- *ATX Power Connector (ATX1: 12x2 pin female):*

PIN	SIGNAL	PIN	SIGNAL
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS_ON
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	POWER OK	20	-5V
9	+5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND

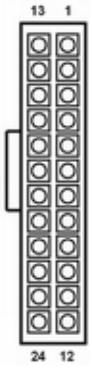


Table 5-11. ATX Power Connector pin definition

- *Digital I/O Pin Header (CN1: 5x2-pin header 2.54mm pitch):*

PIN	SIGNAL	PIN	SIGNAL
1	DO0	2	DI0
3	DO1	4	DI1
5	DO2	6	DI2
7	DO3	8	DI3
9	+5V	10	GND

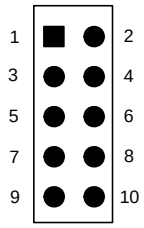


Table 5-12. Digital I/O Pin Header pin definition

- *CD-in Connector (CN2: 4-pin 2.54mm pitch):*

PIN	SIGNAL
1	CD_IN (R)
2	CD_GND
3	CD_GND
4	CD_IN (L)

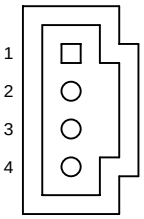


Table 5-13. CD-in Connector pin definition

◆ *IrDA Connector (CN3: 4-pin 2.54mm pitch):*

PIN	SIGNAL
1	+5V
2	Key
3	IR_Rx
4	GND
5	IR_Tx

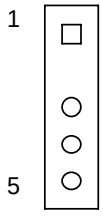
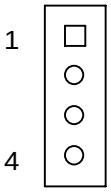


Table 5-14. IrDA Connector pin definition

◆ *TV Input Pin Header (CN4: 4-pin 2.54mm pitch):*

PIN	SIGNAL
1	S-Video C
2	GND
3	S-Video Y
4	GND



Note: For use with optional UGM only.

Table 5-15. TV Input Pin Header pin definition

◆ *Front Audio Connector (CN8: 5x2-pin header 2.54mm pitch):*

PIN	SIGNAL	PIN	SIGNAL
1	MIC2-L	2	Audio GND
3	MIC2-R	4	ACZ_DET#
5	Line2-R	6	MIC2_JD
7	FIO_Sense	8	Key
9	Line2-L	10	Line2_JD

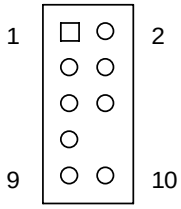


Table 5-16. Digital I/O Pin Header pin definition

◆ *UGM Connector (CN11: AMP/TYCO as for COM Express):*

Refer to UGM Specification V1.0: ***http://www.universal-graphics-module.org/specs/specs.php***

◆ *RS232 Serial Port Header (COM2-4: 5x2 box header 2.54mm pitch):*

PIN	SIGNAL	PIN	SIGNAL
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	NC

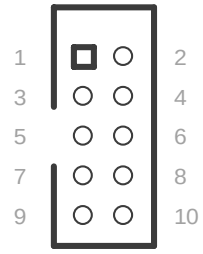
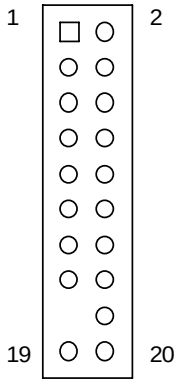


Table 5-17. COM2-4 RS232 Serial Port Header pin definition

◆ *DVI+S/PDIF Pin Header (DVI1: 10x2-pin 2.0mm pitch):*

PIN	SIGNAL	PIN	SIGNAL
1	TMDS_TX0+	2	TMDS_TX1+
3	TMDS_TX0-	4	TMDS_TX1-
5	GND	6	GND
7	TMDS_TX2+	8	TMDS_CLK+
9	TMDS_TX2-	10	TMDS_CLK-
11	GND	12	GND
13	DDC_CLK	14	HPDET
15	DDC_DAT	16	VCC
17	KEY / GND	18	GND
19	SPDIF_IN	20	SPDIF_OUT

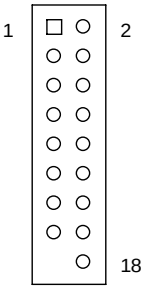


Note: For use with optional UGM only.

Table 5-18. DVI+S/PDIF Pin Header pin definition

◆ *DVI Pin Header (DVI2: 9x2-pin 2.0mm pitch):*

PIN	SIGNAL	PIN	SIGNAL
1	TMDS_TX0+	2	TMDS_TX1+
3	TMDS_TX0-	4	TMDS_TX1-
5	GND	6	GND
7	TMDS_TX2+	8	TMDS_CLK+
9	TMDS_TX2-	10	TMDS_CLK-
11	GND	12	GND
13	DDC_CLK	14	HPDET
15	DDC_DAT	16	VCC
17	KEY	18	GND



Note: For use with optional UGM only.

Table 5-19. DVI Pin Header pin definition

◆ *Fan Connectors (Fan1-2: 3-pin Wafer 2.54mm pitch):*

PIN	SIGNAL
1	GND
2	+12V
3	FAN_RPM

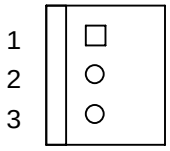


Table 5-20. Fan Connectors pin definition

◆ *Floppy Connector (FDD1: FPC-26 1.0mm pitch):*

PIN	SIGNAL	PIN	SIGNAL
1	+5V	2	#INDEX
3	+5V	4	#DRIVE SELECT A(#DSA)
5	+5V	6	#DISK CHANGE(#DSKCHG)
7	N.C	8	N.C
9	N.C	10	#MOTOR A On(#MOA)
11	N.C	12	DIRECTION SELECT(#DIR)
13	#DRIVE DENSITY SEL(#DS0)	14	#STEP
15	GND	16	#WRITE DATA(#WD)
17	GND	18	#WRITE GATE(#WE)
19	GND	20	#TRACK0
21	GND	22	#WRITE PROTECT(#WP)
23	GND	24	#READ DATA(#RDATA)
25	GND	26	#SIDE ONE SELECT(#HEAD)

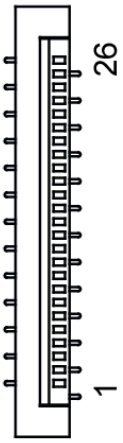


Table 5-21. Floppy Connector pin definition

◆ *Front Panel 1 Header(FP1: 4x2-pin 2.54mm pitch):*

PIN	SIGNAL	PIN	SIGNAL
1	Reset Switch (+)	2	External Speaker (+)
3	Reset Switch (-)	4	NC
5	IDE LED (+)	6	Internal Speaker
7	IDE LED (-)	8	External Speaker (-)

Pins 2, 8: External Speaker wire
Pins 6-8 shorted: Internal Speaker Enable (default)

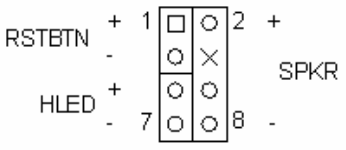


Table 5-22. Front Panel 1 Header pin definition

◆ *Front Panel 2Header (FP2: 5x2-pin 2.54mm pitch):*

PIN	SIGNAL	PIN	SIGNAL
1	Power LED (+)	2	Power On Button (+)
3	NC	4	Power On Button (-)
5	Power LED (-)	6	NC
7	KeyBoard Lock (+)	8	I2C Bus SMB Data
9	GND	10	I2C Bus SMB Clock

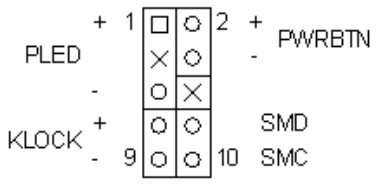


Table 5-23. Front Panel 2 Header pin definition

◆ *IDE Connector (IDE1: 22x2 box header 2.0mm pitch):*

PIN	SIGNAL	PIN	SIGNAL
1	Reset IDE	2	GND
3	IDE Data 7	4	IDE Data 8
5	IDE Data 6	6	IDE Data 9
7	IDE Data 5	8	IDE Data 10
9	IDE Data 4	10	IDE Data 11
11	IDE Data 3	12	IDE Data 12
13	IDE Data 2	14	IDE Data 13
15	IDE Data 1	16	IDE Data 14
17	IDE Data 0	18	IDE Data 15
19	Ground	20	NC
21	DREQ0	22	GND
23	IDEIOW#	24	GND
25	IDEIOR#	26	GND
27	IDEIORDY	28	CBSEL
29	DACK0#	30	GND
31	IDEIRQ14	32	NC
33	IDE Address 1	34	PDIAG#
35	IDE Address 0	36	IDE Address 2
37	IDE Chip select 1#	38	IDE Chip select 3#
39	IDE activity	40	GND
41	+5V	42	+5V
43	GND	44	NC

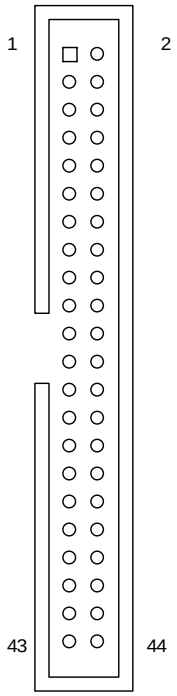


Table 5-24. IDE1 Connector pin definition

◆ *LVDS1 Connector (LVDS1: Hirose DF13-30DP 1.25mm):*

PIN	SIGNAL	PIN	SIGNAL
2	Backlight Control	1	Backlight Enable
4	Panel Power	3	Panel Power
6	TxclkB#	5	TxclkA#
8	TxclkB	7	TxclkA
10	GND	9	GND
12	TxoutB0#	11	TxoutA0#
14	TxoutB0	13	TxoutA0
16	TxoutB1#	15	TxoutA1#
18	TxoutB1	17	TxoutA1
20	TxoutB2#	19	TxoutA2#
22	TxoutB2	21	TxoutA2
24	TxoutB3#	23	TxoutA3#
26	TxoutB3	25	TxoutA3
28	GND	27	GND
30	I2C_Clock	29	I2C_Data

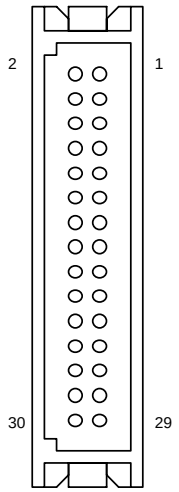


Table 5-25. LVDS1 Connector pin definition

◆ *LVDS2 Connector (LVDS2: Hirose DF13-40DP 1.25mm):*

PIN	SIGNAL	PIN	SIGNAL
2	Backlight Control	1	Backlight Enable
4	Panel Power	3	Panel Power
6	TxclkB#	5	TxclkA#
8	TxclkB	7	TxclkA
10	GND	9	GND
12	TxoutB0#	11	TxoutA0#
14	TxoutB0	13	TxoutA0
16	TxoutB1#	15	TxoutA1#
18	TxoutB1	17	TxoutA1
20	TxoutB2#	19	TxoutA2#
22	TxoutB2	21	TxoutA2
24	TxoutB3#	23	TxoutA3#
26	TxoutB3	25	TxoutA3
28	GND	27	GND
30	I2C_Clock	29	I2C_Data
32	GND	31	GND
34	TxoutB4#	33	TxoutA4#
36	TxoutB4	35	TxoutA4
38	GND	37	GND
40	Panel Power	39	Panel Power

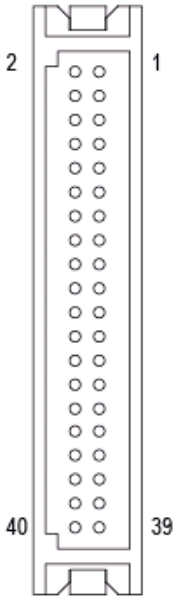


Table 5-26. LVDS2 Connector pin definition

- *Serial ATA Connectors (SATA1-2: 7-pin "L" type):*

PIN	SIGNAL	PIN	SIGNAL
1	GND	2	SATA_TXP
3	SATA_TXN	4	GND
5	SATA_RXN	6	SATA_RXP
7	GND		

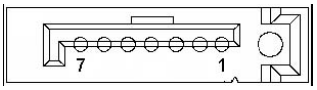


Table 5-27. Serial ATA Connector pin definition

- *USB Header (USB1-2: 5x2-pin header 2.54mm pitch):*

PIN	SIGNAL	PIN	SIGNAL
1	+5V	2	+5V
3	USBD2-	4	USBD3-
5	USBD2+	6	USBD3+
7	GND	8	GND
9	"key"	10	GND

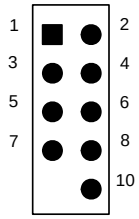


Table 5-28. USB Header pin definition